UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, WA 98115

Refer to:
2003/00132

June 17, 2003

Mr. Lawrence C. Evans
U.S. Army Corps of Engineers
Regulatory Branch, CENWP-CO-GP
PO Box 2946
Portland, OR 97208-2946

Re: Endangered Species Act Formal Section 7 and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation Request for the Salem Mill Race Screen and Waller Dam Ladder Project, Mill Creek, North Santiam and Upper Willamette River Basins, City of Salem, Marion County, Oregon (Corps No. 200200809)

Dear Mr. Evans:

Enclosed is a biological opinion (Opinion) prepared by NOAA's National Marine Fisheries Service (NOAA Fisheries) pursuant to section 7 of the Endangered Species Act (ESA) on the effects of the proposed Salem Mill Race Screen and Waller Dam Ladder Project, on Mill Creek in Marion County, Oregon. In this Opinion, NOAA Fisheries concludes that the proposed action is not likely to jeopardize the continued existence of ESA-listed Upper Willamette River (UWR) chinook salmon (*Oncorhynchus tshawytscha*) and steelhead (*O. mykiss*). As required by section 7 of the ESA, NOAA Fisheries also includes reasonable and prudent measures with nondiscretionary terms and conditions that NOAA Fisheries believes are necessary to minimize the impact of incidental take associated with this action.

This document also serves as consultation on essential fish habitat pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act and implementing regulations at 50 CFR Part 600.

If you have any questions regarding this consultation, please contact Anne Mullan of my staff in the Oregon Habitat Branch at 503.231.6267.

Sincerely,

for Michael R Course

D. Robert Lohn
Regional Administrator

cc: Steve Mamoyac, ODFW
Jim Bonnet, City of Salem

Endangered Species Act - Section 7 Consultation
Biological Opinion

&

Magnuson-Stevens Fishery Conservation and Management Act
Essential Fish Habitat Consultation

Mill Race Screen and Waller Dam Ladder Project, Mill Creek,
North Santiam and Upper Willamette River Basins,
City of Salem, Marion County, Oregon
(Corps No. 200200809)

Agency:	U.S. Army Corps of Engineers
Consultation Conducted By:	NOAA's National Marine Fisheries Service, Northwest Region
Date Issued:	June 16, 2003
Issued by:	for Michael R Crouse D. Robert Lohn Regional Administrator
Refer to:	**2003/00132**

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1. INTRODUCTION

1.1 Consultation History

On February 12, 2003, NOAA's National Marine Fisheries Service (NOAA Fisheries) received a request for Endangered Species Act (ESA) section 7 consultation from the U.S. Army Corps of Engineers (COE) for the Salem Mill Race Screen and Waller Dam Ladder Project, on Mill Creek in Marion County, Oregon. The biological assessment (BA) provided by the COE with the request for consultation determined that the proposed activities covered would be likely to adversely affect anadromous fish species listed under the ESA. Further information about the project was provided with the final design drawings received May 12, 2003, at a meeting May 29, 2003, and by email from David Evans and Associates (applicant's consultant) in May and June 2003. The objective of this biological opinion (Opinion) is to determine whether the proposed action is likely to jeopardize the continued existence of Upper Willamette River (UWR) chinook salmon or UWR steelhead.

Mill Creek (a tributary of the Willamette River) supports UWR chinook salmon (*Oncorhynchus tshawytscha*) and UWR steelhead (*O. mykiss*). UWR chinook salmon were listed as threatened under the ESA by NOAA Fisheries on March 24, 1999 (64 FR 14308). UWR steelhead were listed as threatened under the ESA by NOAA Fisheries on March 25, 1999 (64 FR 14517). Protective regulations for both species were issued under section 4(d) of the ESA on July 10, 2000 (65 FR 42422).

1.2 Proposed Action

1.2.1 Mill Race Fish Screen

The intake to the Mill Race Canal is partially obscured by a wooden retaining wall 5.5-feet wide, which will be removed. A log boom extends from the Mill Race toward the fish ladder, which will be modified, by reducing the length in front of the ladder, and by adding a slanted bar debris deflection rack at the upstream end.

The proposed screen will be a profile bar type with wedge wire, with ten 4-foot wide screen panels, for a total of 40-feet screen length. At 4.3-feet submergence, 78% of the screen is submerged and will handle a maximum withdrawal of 60.6 cubic feet per second (cfs), and the maximum expected withdrawal is 50 cfs. Headgates downstream of the proposed screens regulate flows, and will be adjusted such that the minimum wetted area will be 3.5 feet under a worst case scenario, matching the ladder low flow (DEA memo May 22, 2003).

The screen is designed to function up to the $Q_{10\%}$ or for 90% of flows in the river,[1] reported as 208.8 cfs (spreadsheet in email from DEA forwarded by Don Borda on May 23, 2003). This

[1] Note this is not $Q_{10\%}$, or the 10-year event, which is given as approximately 1900 cfs.

flow level correspond to water elevations of 175 feet. Flows greater than 208.8 cfs will overtop both the screen and the north bank of Mill Creek, thereby eliminating the screen's function (DEA memo, June 5, 2003).

Backwash spray nozzles will provide cleaning with a programmable logic controller (PLC) to initiate bursts at the upstream end, with adjustable start times and duration. The PLC allows manual override and is equipped with alarms which dial staff if the water differentials indicate blockage. The backwash nozzles overlap to provide coverage over the entire screen face.

1.2.2 Waller Dam Ladder Improvements

The 87-year-old dam across Mill Creek is 51 feet long and 2.5 feet high, and diverts flows into the Mill Race. The existing ladder on the left bank limits juvenile fish passage immediately downstream from the Mill Race. The dam was identified by the City of Salem's (the City) 2000 Fish Passage Survey as the only passage block in the lower part of Mill Creek, with 41 bridges and five dams surveyed (City of Salem 2001).

The ladder consists of four weirs dividing the flow into five pools approximately 8 feet long and 6 feet wide. Jump heights were originally one foot, but could be higher unless the weirs were adjusted regularly, and were exceeding criteria for juvenile passage.

Two pools will be added to the ladder, reducing average jump height to 7.9 inches. The ladder improvements were described as designed to function up to the $Q_{10\%}$ river flow. When the river flows are above $Q_{10\%}$ the ladder exceeds the criteria for maximum energy dissipation per pool. The standard was described as "in accordance with ODFW criteria" (DEA memo May 22, 2003), and was calculated as directed in Appendix A of the 1997 ODFW Guidelines and Criteria for Stream-Road Crossings.

This high flow design discharge is described as "the flow that is not exceeded more than 10% ($Q_{10\%}$) of the time during months of adult migration." The following formula to approximate $Q_{10\%}$ (in cfs) is given in the ODFW guidelines:

$$Q_{10\%} = 0.18 \times Q_2 + 36 \text{ cfs}$$

where the Q_2, or 2-year flood event is greater than 44 cfs. The DEA spreadsheet showed a value derived from regression for Q_2 of 960 cfs, which was used in the above equation. This resulted in $Q_{10\%}$ value of 208.8 cfs. This corresponds roughly with available USGS gage data for 1954-1978 for the months of February - October, winter steelhead and spring chinook adult migration periods (USGS 2003).

1.2.3 Proposed Conservation Measures

The COE permit would include the following conservation measures, proposed by the City, to minimize or avoid adverse impacts on listed species, habitat, and essential fish habitat (EFH).

The City developed these conservation measures in collaboration with NOAA Fisheries, and the COE submitted them to NOAA Fisheries as an addendum to the BA (thus amending the proposed action) on February 5, 2003. The City will incorporate these conservation measures into the contract document for the proposed project.

1.2.3.1 Fish Passage

The Mill Race area will be coffer-dammed in two stages. Initially the area for construction of the proposed screen will be blocked with an opening remaining at the downstream end of the intake. In the second stage the remaining area will be blocked to construct the concrete wall adjacent to the catwalk across the screen. During the second construction stage, flows into the Mill Race will be through the screened intake. The first stage is expected to last approximately eight weeks.

During construction, the existing ladder will be sealed behind a coffer dam. The City will employ an adjacent temporary fish ladder provided by Oregon Department of Fish and Wildlife, placed at the sluice gate, which will be removed to allow the ladder to function.

1.2.3.2 Hydraulic Monitoring

Upon completion of construction, the City will prepare an "as built" report of the construction. The "as built" report will compare the design elevations for the fish ladder to the structure that was actually built. The City will evaluate hydraulic conditions in the fish ladder by measuring velocity and depth of flows that pass through the fish ladder under various flow scenarios (low flow to high flows).

The City will test the screen performance for approach and sweeping velocities. The City should do an initial screen performance test to measure approach and sweeping velocities, after which they should adjust the flow control baffles so that the approach velocity, measured perpendicular to, and 3 inches in front of, the screen face does not exceed the criteria of 0.4 feet per second (fps). The sweeping velocity, measured parallel to, and 3 inches in front of, the screen face, should equal or exceed 0.4 fps, and should not decelerate anywhere along the screen face. Once adjusted, the City will conduct a final hydraulic evaluation, measuring the approach and sweeping velocities under the maximum withdrawal rate and minimum forebay level, to verify functionality.

1.2.3.3 Fish Ladder Maintenance Plan

The City will prepare a fish ladder maintenance plan within 90 days after completion of construction. The plan will detail the frequency of inspection and measures to be implemented if the fish ladder collects excessive amounts of debris, such as gravel and woody debris.

1.2.3.4 Fish Salvage/Capture and Release

Before and intermittently during pumping to isolate the in-water work area, the City will attempt to capture and release fish from the isolated area using trapping, seining, electrofishing, or other methods as are prudent to minimize risk of injury to fish.

1.2.3.5 Sediment/Erosion Control

The City will prepare and implement a Pollution and Erosion Control Plan (PECP) to prevent pollution of Mill Creek related to construction operations. The plan will be available for inspection by the COE or NOAA Fisheries upon request.

The approved plan will be implemented fully and monitored by the contractor. Construction activities that may contribute sediment or result in erosion will not begin before control devices are in place.

All control devices will be inspected daily during rainy periods and weekly during dry periods. During all phases of construction, including no-work periods and other work stoppages, personnel will be available to make immediate repairs on control devices. All silt fences will be removed upon completion of the project.

All equipment used for in-water work will be cleaned before use. External grease, oil, dirt, and mud will be removed. Water used for cleaning will not be discharged into the creek.

1.2.3.6 Hazardous Materials

As described above, the City will develop a Pollution Control Plan, including a spill response plan. This plan will describe responsibility for containment and removal of any hazardous material released including concrete. No hazardous material will be allowed to enter the river. The contractor will be responsible for containment and removal of any hazardous materials released.

In the event that hazardous material is encountered during the course of the work, regardless of whether or not the material was shown in the plans, implementation of the City's plan will be included in the scope of the contract and carried out by the contractor. The contractor will maintain, at the job site, the applicable equipment and material designated in the plan.

2. ENDANGERED SPECIES ACT

2.1 Biological Opinion

2.1.1 Biological Information

Populations of anadromous fish in Mill Creek historically were undoubtedly small due to the size of the stream and lack of summer flows. However, the additional flows from the diversions of the North Santiam attract migrating spawners en route to the Santiam confluence with the Willamette over 20 miles downstream. Similarly, outmigrating juveniles may travel downstream through the Salem Ditch, past unscreened diversions, and potentially traverse Mill Creek to the Willamette.

UWR winter steelhead and spring chinook salmon migrate through, spawn, and rear in the North Santiam. The numbers of migrating fish that move through Mill Creek is not known, although spring chinook have been found to spawn and rear in Mill Creek (ODFW 1990, p.110). Information about each evolutionarily significant unit (ESU) is provided below.

Upper Willamette River Spring Chinook

The UWR chinook salmon ESU includes native spring-run populations above Willamette Falls and in the Clackamas River. In the past, it included sizable numbers of spawning salmon in the Santiam River, the middle fork of the Willamette River, and the McKenzie River, as well as smaller numbers in the Molalla River, Calapooia River, and Albiqua Creek. The total run sizes reported for UWR spring chinook since 1970 have ranged from 30,000 to 130,000, with the 2000-2002 runs in the range of 60,000 to 80,000. In 2002, fishery counts showed a rate of 77 % for marked fish through June. Hence, approximately 23% of the 2002 forecasted run size of 74,000 results in approximately 17,000 natural spawners in the Willamette basin (ODFW 2002). Marking of hatchery releases with an adipose fin clip reached 100%, beginning with those released in 1998 (S. King, ODFW, personal communication with A. Mullan, NOAA Fisheries, 28 October 2002, email).

Fish in this ESU are distinct from those of adjacent ESUs in life history and marine distribution. The life history of chinook salmon in the UWR ESU includes traits from both ocean- and stream-type development strategies. Coded wire tag (CWT) recoveries indicate that the fish travel to the marine waters off British Columbia and Alaska. More Willamette fish are recovered in Alaskan waters than fish from the Lower Columbia River ESU. UWR chinook salmon mature in their fourth or fifth years. Historically, 5-year-old fish dominated the spawning migration runs, but recently, most fish have matured at age 4. The timing of the spawning migration is limited by Willamette Falls. High flows in the spring allow access to the upper Willamette basin, whereas low flows in the summer and autumn prevent later-migrating fish from ascending the falls. The low flows may serve as an isolating mechanism, separating this ESU from others nearby.

For the UWR chinook salmon ESU as a whole, NOAA Fisheries estimates that the median population growth rate (lambda) over the base period ranges from 1.01 to 0.63, decreasing as the effectiveness of hatchery fish spawning in the wild increases compared to that of fish of wild origin (Tables B-2a and B-2b in McClure *et al.* 2000).

In 2003, NOAA Fisheries convened a Biological Review Team (BRT) to update the status of listed chinook salmon ESUs, using recent spawner abundance and hatchery fractions from marking studies. Their report provides some updated information on this ESU. All spring chinook in the ESU, except those entering the Clackamas River, must pass Willamette Falls. The BRT noted that, while lacking an assessment of the ratio of hatchery-origin to wild-origin chinook passing the falls, the hatchery-origin fish dominate the runs. They define natural-origin fish as having parents that spawned in the wild as opposed to hatchery -origin fish whose parents spawned in a hatchery (BRT 2003).

The BRT reviewed data for the North Santiam and found natural-origin spawners were greatly outnumbered by hatchery origin spawners, resulting in an estimated 94% hatchery origin spawners in 2000 and 98% in 2001. This led the BRT to consider the population as not self-sustaining, although it was recognized as one of seven historical spring chinook populations. The basis for a large number of spring chinook released in the Upper Willamette is for mitigation for the loss of habitat above Federal hydroprojects. While harvest retention is only allowed for hatchery marked fish, take of natural spawners from hooking mortality and non-compliance also occurs. Overall, the hatchery production is considered a potential risk, because it masks the productivity of natural population, inter-breeding between hatchery and natural fish poses potential genetic risks and the incidental take from the fishery promoted by the hatchery production can increase adult mortality.

<u>Upper Willamette River Winter Steelhead</u>

The UWR steelhead ESU occupies the Willamette River and tributaries upstream of Willamette Falls, extending to and including the Calapooia River. These major river basins containing spawning and rearing habitat comprise more than 12,000 km^2 in Oregon. Rivers that contain naturally-spawning, winter-run steelhead include the Tualatin, Molalla, Santiam, Calapooia, Yamhill, Rickreall, Luckiamute, and Mary's Rivers. Early migrating winter and summer steelhead have been introduced into the upper Willamette basin, but those components are not part of the ESU. Native winter steelhead within this ESU have been declining since 1971, and have exhibited large fluctuations in abundance.

In general, native steelhead of the upper Willamette basin are late-migrating winter steelhead, entering freshwater primarily in March and April. This atypical run timing appears to be an adaptation for ascending Willamette Falls, which functions as an isolating mechanism for UWR steelhead. Reproductive isolation resulting from the falls may explain the genetic distinction between steelhead from the upper Willamette basin and those in the lower river. UWR late-migrating steelhead are ocean-maturing fish. Most return at age four, with a small proportion returning as 5-year-olds (Busby *et al.* 1996).

Willamette Falls (river mile 26) is a known migration barrier. Winter steelhead and spring chinook salmon historically occurred above the falls, whereas summer steelhead, fall chinook, and coho salmon did not. Detroit and Big Cliff Dams cut off 540 km of spawning and rearing habitat in the North Santiam River. In general, habitat in this ESU has become substantially simplified since the 1800's by removal of large woody debris to increase the river's navigability.

Spawning takes place from April through the first of June, indicating little change from historical conditions. Because spawning takes place primarily in May, it is separated in time from that of UWR chinook salmon which takes place primarily in September. Some spatial separation occurs as well because UWR steelhead typically spawn in smaller streams than UWR chinook salmon. Thompson *et al.* (1966) estimated that the North Santiam subbasin supported a population of 3,500 UWR steelhead in the 1950s and 1960s, including adults trapped at Minto Dam. A winter-run hatchery stock, developed primarily from North Santiam wild fish but with some fish from the Big Creek and Klaskanine River stocks, was released into the Santiam subbasin beginning in 1952. The main hatchery production of native (late-run) winter steelhead occurred in the North Fork Santiam River, where estimates of hatchery proportions in natural spawning areas ranged from 14% to 54% (Busby *et al.* 1996). ODFW (1990) released approximately 100,000 steelhead smolts each year, mostly into the mainstem North Santiam River and Big Cliff Reservoir. Traps installed at Stayton in the North Santiam River in 1993 and 1994 caught 42% and 85%, respectively, marked winter steelhead (Kostow 1995). Hatchery strays from outside the system represented 2% of the catch in both years; the remainder were North Santiam stock hatchery fish. Beginning with releases in 1990, 100% were marked. Estimates of the percentage of naturally-spawning fish attributable to hatcheries in the late 1990s were 17% in the North Santiam (Chilcote 1997). Steelhead smolt releases stopped after 1998, with the three-year-old spawners returning in 2001 (W. Hunt, ODFW, personal communication with A. Mullan, NOAA Fisheries, 28 October 2002 email).

The West Coast steelhead Biological Review Team (BRT) met in January 2003, to determine if new information or data warranted any modification of the conclusions of the original BRTs. They focused primarily on information for anadromous populations in the risk assessments for steelhead ESUs, but considered the presence of relatively numerous, native resident fish as a mitigating risk factor for some ESUs. Their draft report (BRT 2003) summarizes new information and the preliminary BRT conclusions on the UWR winter steelhead ESU and nine other ESUs.

They noted that after a decade in which Willamette Falls counts were near the lowest levels on record, adult returns for 2001 and 2002 were up significantly. Yet the total abundance is small for the entire ESU with a recent mean of less than 6,000, and a number of populations that are each at relatively low abundance. Most of the populations are in decline over the period of the available time series. Given that they could not conclusively identify a single naturally self-sustaining population, it is uncertain whether recent increases can be sustained. The discontinuation of the releases of the "early" winter-run hatchery population was described as positive, but their were concerns regarding continued releases of non-native summer steelhead, and the available time series are confounded by the presence of hatchery-origin spawners.

For the UWR steelhead ESU as a whole, NOAA Fisheries estimates that the median population growth rate (lambda) over the base period ranges from 0.94 to 0.87, decreasing as the effectiveness of hatchery fish spawning in the wild increases compared to that of fish of wild origin (Tables B-2a and B-2b in McClure *et al.* 2000).

2.1.2 Evaluating Proposed Actions

An action area is defined by NOAA Fisheries regulations (50 CFR 402.02) as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action." Direct effects occur at the project site and may extend upstream or downstream based on the potential for impairing fish passage, hydraulics, sediment and pollutant discharge, and the extent of riparian habitat modifications. Indirect effects may occur throughout the watershed where actions described in this Opinion lead to additional activities or affect ecological functions, contributing to habitat degradation. Thus, the action area is defined as that bankline, riparian area, and aquatic habitat affected by the proposed action. For this consultation, the action area includes the bankline, riparian area, and aquatic habitat in Mill Creek from approximately 100 ft upstream from Waller Dam, downstream to its confluence with the Willamette River. Additionally, for work in the Mill Race, the action area includes the area upstream of the intake to the Mill Race, downstream to the confluence with the Pringle Creek.

2.1.2.1 Biological Requirements

The first step in the methods NOAA Fisheries uses for applying the ESA section 7(a)(2) to listed salmon is to define the species' biological requirements that are most relevant to each consultation. NOAA Fisheries also considers the current status of the listed species, taking into account population size, trends, distribution and genetic diversity. To assess to the current status of the listed species, NOAA Fisheries starts with the determinations made in its decision to list the species for ESA protection and also considers new data available that is relevant to the determination.

The relevant biological requirements are those necessary for the subject species to survive and recover to a naturally-reproducing population level, at which time protection under the ESA would become unnecessary. Adequate population levels must safeguard the genetic diversity of the listed stock, enhance its capacity to adapt to various environmental conditions, and allow it to become self-sustaining in the natural environment.

Essential elements for salmonids are: Substrate, water quality, water quantity, water temperature, water velocity, cover/shelter, food (juvenile only), riparian vegetation, space, and safe passage conditions. Based on migratory and other life history timing, it is likely that adult and juvenile life stages are present in the action area when activities would be carried out. Actions authorized by the proposed project may affect water velocity, riparian vegetation, space, and safe passage conditions.

Because the Mill Creek flows are predominantly from the North Santiam, fish migrating through the creek are potentially bound for the North Santiam. In their 2000 Salmon Basinwide Recovery Strategy, the Federal Caucus (2000) identified the North Santiam as one of three priority subbasins in which to focus immediate attention for UWR chinook and UWR steelhead, because productive capacity could be significantly increased if problems related to water diversion were addressed. Actions suggested included protecting productive habitat and fixing flow, passage and diversion problems by restoring flows to depleted streams, screening and combining water diversions, and reducing passage obstructions.

For this consultation, the biological requirements are improved habitat characteristics that function to support successful rearing and migration. The current status of the indicated fish species, based upon their risk of extinction, has not significantly improved since the species were listed.

2.1.2.2 Environmental Baseline

Human activities have had vast effects on the salmonid populations in the Willamette River drainage. The Willamette River, once a highly braided river system, has been dramatically simplified through channelization, dredging, and other activities that have reduced rearing habitat by as much as 75%. In addition, the construction of 37 dams in the basin has blocked access to over 700 kilometers (km) of stream and river spawning habitat. The dams also alter the temperature regime of the Willamette and its tributaries, affecting the timing and development of naturally-spawned eggs and fry. Water quality is also affected by development and other economic activities. Agricultural and urban land uses on the valley floor, as well as timber harvesting in the Cascade and Coast ranges, contribute to increased erosion and sediment load in Willamette River basin streams and rivers. Finally, since at least the 1920s, the lower Willamette River has suffered municipal and industrial pollution.

The City of Salem diverts approximately 80-100 cfs into the Salem Ditch on the North Santiam River. The Salem Ditch traverses approximately 2 miles of land before emptying into Mill Creek. Natural flows in Mill Creek during the summer months are minimal, approximately 10 cfs by late summer. Flows are primarily provided by the operations of Santiam Water Control District (SWCD), delivering contractual and tailwater flows from SWCD diversions into Salem Ditch.

Between 50 cfs and up to 100 cfs is diverted from Mill Creek into the Salem Mill Race to provide water for the historic mill. After flowing through the City of Salem, the Mission Mill, and the Willamette University campus, the Mill Race enters Pringle Creek from the north bank, approximately 50 yd upstream from the Pringle Creek weir. At the downstream end, the Mill Race flows via a flume into Pringle Creek forming a velocity barrier to upstream migrants and preventing adult passage. Fish entering the canal may be killed or injured in the historic woolen mill hydropower facility downstream.

The City also diverts flow from Mill Creek into Shelton Ditch, which then empties into Pringle Creek. Both Mill Creek and Pringle Creek are tributaries of the Willamette River, with confluences between river mile (RM) 83 and 85, over 20 miles downstream from the Santiam River confluence at RM 108.

Mill Creek flows since 1954 range from lows below 10 cfs to highs over 1800 cfs, indicated by records on the gage downstream of Waller Dam, excluding the flows diverted into the Mill Race. Monthly averages during passage of upstream migrants range from 50 cfs to 130 cfs, with the Mill Race diversions of 50 cfs significantly reducing the creek flows downstream from the canal.

Mill Creek is 303d-listed for the fecal coliform parameter in periods checked year round by Oregon Department of Environmental Quality (ODEQ 2002). Their data showed that 32% of annual values exceeded the standard between 1990-1994. Data for the North Santiam, providing most of Mill Creek flows, showed that 39% of summer values exceeded the temperature standard (17.8°C), with exceedences annually and a maximum of 22°C in water years 1986-1995. For the spawning season criteria of 12.8°C, 12 days in the period September 1999- June 2000 had temperatures exceeding the criteria (ODEQ 2002). Lack of shade would inhibit the cooling of water from the Santiam-Salem Ditch confluence to the point of entry into Mill Creek.

According to the BA, habitat elements are missing due to channel armoring including limited large woody debris, pool frequency, and off-channel habitat. Floodplain connectivity is also lacking, and the hydrology is similarly not properly functioning because of the urban nature of most of the Mill Creek basin. The Matrix of Pathways and Indicators was presented with all but a few indicators not properly functioning or at risk, and the two presented as properly functioning, width/depth ratio and streambank conditions can only minimally be described as such because of the armored nature of the creek.

2.1.3 Analysis of Effects

2.1.3.1 Effects of the Proposed Actions

2.1.3.1.1 Screen Effects

In the existing operations, the Mill Race attracts juvenile fish, providing passage downstream but at risk of injury and mortality in the historic woollen mill, and in the flume dropping into Pringle Creek. The screen will provide safer passage through Mill Creek for juveniles by blocking access to the Mill Race.

2.1.3.1.2 Ladder Improvement Effects

Barriers to salmon and steelhead passage at Waller Dam will be improved by the ladder addition. However, the lack of functionality at the 10% highest flows during the months of February - October (see Section 1.2.2), when either adult winter steelhead or spring chinook are migrating upstream, reduces the effectiveness of the ladder. Maximum energy dissipation per pool will be

higher during these remaining 10% of flows, and adult passage could be limited. However at lower flows, when juveniles are expected to use the ladder, improved passage is provided.

2.1.3.1.3 Construction Effects

The Mill Race will have continuous minimum 30 cfs flows throughout construction through an opening left to the side of the coffer dam in the canal for the screen. NOAA Fisheries proposed dewatering the Mill Race to reduce take of outmigrating juveniles. The City did not wish to restrict Mill Race flows, because the historic mill and Willamette University downstream have significant concerns about temporary disruptions in the flows. They also noted that the existing potential take created by the water withdrawals will be alleviated by the completion of the new screen (meeting 5/29/03 and personal communication, telephone conversation Jim Bonnet, City of Salem, and Anne Mullan, NOAA Fisheries 6/11/03). Increased velocities into the narrower canal intake during construction may attract outmigrating juveniles.

Most of the flows across the face of the dam, averaging approximately 50 cfs during July-September, are expected to pass through the temporary ladder during construction. This should provide an attraction flow for juvenile outmigrants, which will deter some from entering the Mill Race.

The construction will primarily take place during the in-water work window, with the exception of removing coffer dams after construction. This could result in some increases in turbidity during the final migration months for adults, but would overlap as well if done earlier. Turbidity will not exceed the standard of 10% above ambient conditions, and silt curtains may be used if necessary.

2.1.3.1.4 Fish Rescue, Salvage and Relocation

As a result of the proposed action, salvage activities in the coffer dam around the ladder and screen construction areas would require potential direct handling of listed salmonids during fish removal. Based on a discussion with the local ODFW biologist regarding the presence of salmonids in the project area, the potential exists to capture and relocate up to 30 steelhead or chinook salmon during work area isolation and fish rescue and salvage efforts (W. Hunt, personal communication with A. Mullan, NOAA Fisheries, phone conversation June 11, 2003) . Up to a 10% direct or delayed mortality rate from capture and relocation stress could occur during fish salvage and removal resulting in lethal take of up to three steelhead or chinook salmon.

2.1.3.2 Cumulative Effects

Cumulative effects are defined in 50 CFR 402.02 as those effects of "future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation." Future Federal actions, including the ongoing operation of hydropower systems, hatcheries, fisheries, and land management activities are being

(or have been) reviewed through separate section 7 consultation processes. Therefore, these actions are not considered cumulative to the proposed action.

Other beneficial actions affecting passage through Mill Creek include work to improve passage at culverts, further screening of diversions in the Salem Ditch, through which many Mill Creek migrants pass, and possibly some evaluation of and reduction in diversions from the North Santiam, particularly during annual and drought low flow periods, by the City of Salem and other current water right holders.

Ongoing urbanization of the basin will potentially result in increases in impervious surface, and higher levels of stormwater runoff. This could further degrade the indicators which are not properly functioning. Increased runoff carrying pollutants from urban areas in the flows attracting fish to the Mill Creek basin could result in reducing survival of adults returning to spawn, and may affect rearing habitat as well.

2.1.4 Conclusion

NOAA Fisheries has determined, based on the available information, that the proposed action covered in this Opinion is not likely to jeopardize the continued existence of listed salmonids. NOAA Fisheries used the best available scientific and commercial data to apply its jeopardy analysis, analyzing the effects of the proposed action on the biological requirements of the species relative to the environmental baseline, together with cumulative effects. Our conclusions are based on the following considerations: (1) Most of the proposed work will occur during the in-water work window of July 1 through September 30, which NOAA Fisheries expects to minimize the likelihood of UWR steelhead and chinook presence in the action area due to peak upstream migration having occurred earlier; (2) any increases in sedimentation and turbidity to the reaches of Mill Creek will be short-term and minimized by best management practices including work area isolation; (3) the new screen will provide safer passage, reducing take from the mill operations, and will meet NOAA Fisheries criteria thus reducing incidental take; (4) the ladder improvements will benefit juvenile passage and reduce take; (5) the improved passage contributes to one of the immediate action needs under the Basinwide Recovery Strategy; and (6) the proposed action is not likely to impair properly functioning habitat, appreciably reduce the functioning of already impaired habitat, or retard the long-term progress of impaired habitat toward proper functioning condition essential to the long-term survival and recovery at the population or ESU scale. Overall, NOAA Fisheries expects long-term beneficial effects of improved fish passage as a result of screening the areas with inadequate passage.

2.1.5 Conservation Recommendations

Section 7(a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. Conservation recommendations are discretionary measures suggested to minimize or avoid adverse effects of a proposed action on listed species, to minimize or avoid adverse modification of critical habitat, or to develop additional information. NOAA Fisheries

believes the following conservation recommendations are consistent with these obligations, and therefore should be carried out by the COE or the applicant:

1. Produce a water management plan which addresses flows required for passage, rearing, and spawning for the Mill Creek basin, and the potential benefits from reduced diversions from the North Santiam.

2. Improve the unscreened diversions on the Salem Ditch by adding screens meeting NOAA Fisheries' criteria.

3. For NOAA Fisheries to be kept informed of actions minimizing or avoiding adverse effects, or those that benefit listed salmon and steelhead or their habitats, we request notification of the achievement of any conservation recommendations when the COE submits its annual report describing achievements of the fish monitoring program during the previous year.

2.1.6 Reinitiation of Consultation

This concludes formal consultation on these actions in accordance with 50 CFR 402.14(b)(1). Reinitiation of consultation is required: (1) If the amount or extent of incidental take is exceeded; (2) if the action is modified in a way that causes an effect on the listed species that was not previously considered in the BA and this Opinion; (3) if new information or project monitoring reveals effects of the action that may affect the listed species in a way not previously considered; or (4) a new species is listed or critical habitat is designated that may be affected by the action (50 CFR 402.16).

If the applicant fails to provide specified monitoring information by the required date, NOAA Fisheries will consider that a modification of the action that causes an effect on listed species not previously considered, and causes the Incidental Take Statement of this Opinion to expire.

2.2 Incidental Take Statement

Section 9 and rules promulgated under section 4(d) of the ESA prohibit any taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct) of listed species without a specific permit or exemption. "Harm" is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, and sheltering. "Harass" is defined as actions that create the likelihood of injuring listed species by annoying it to such an extent as to significantly alter normal behavior patterns which include, but are not limited to, breeding, feeding, and sheltering. Incidental take is take of listed animal species that results from, but is not the purpose of, the Federal agency or the applicant carrying out an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to, and not intended as part of, the agency action is not considered prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement.

An incidental take statement specifies the impact of any incidental taking of threatened species. It also provides reasonable and prudent measures that are necessary to minimize impacts and sets forth terms and conditions with which the action agency must comply to implement the reasonable and prudent measures.

2.2.1 Amount and Extent of the Take

NOAA Fisheries anticipates that the actions covered by this Opinion are reasonably certain to result in incidental take of ESA-listed salmonids because of potential adverse effects from increased sediment levels, chemical contamination, and the potential for direct incidental take during in-water work. Handling of juvenile steelhead or chinook salmon during the work isolation process may result in incidental take of individuals if juvenile salmonids are present during the construction period. NOAA Fisheries anticipates non-lethal incidental take of up to 30 individuals, of which, lethal take of three juvenile steelhead or chinook salmon could occur as a result of the fish rescue, salvage and relocation activities covered by this Opinion. The potential adverse effects of the other project components on population levels are largely unquantifiable and NOAA Fisheries does not expect them to be measurable in the long term. The extent of authorized take is limited to UWR steelhead or UWR chinook salmon in Mill Creek and is limited to that caused by the proposed action within the action area.

2.2.2 Reasonable and Prudent Measures

NOAA Fisheries believes that the following reasonable and prudent measures are necessary and appropriate to avoid or minimize take of listed salmonid species resulting from the action covered by this Opinion. The COE shall include measures that will:

1. Avoid or minimize the likelihood of incidental take associated with general construction of the fish screen and ladder improvements, by ensuring fish passage around the project during construction and avoiding or minimize disturbance to riparian and aquatic systems.

2. Avoid or minimize the likelihood of incidental take associated with fish screen and ladder operations by ensuring that the facilities allow upstream and downstream movement of adult and juvenile fish past Waller Dam and the Mill Race.
3. Ensure completion of a comprehensive monitoring and reporting program to confirm this Opinion is meeting its objective of minimizing take from permitted activities.

2.2.3 Terms and Conditions

To be exempt from the prohibitions of section 9 of the ESA, the COE and/or their contractors must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

1. To implement reasonable and prudent measure #1 (general construction of the fish screen and ladder improvements), the COE shall ensure that:

   a. Timing of in-water work. Work below ordinary high water will be completed during the preferred in-water work period July 1- September 30, except for the removal of the coffer dams after other work is completed. Any other work below ordinary high water outside of the approved work period must approved in writing by NOAA Fisheries.
   b. Cessation of work. Project operations will cease under high flow conditions that may result in inundation of the project area, except for efforts to avoid or minimize resource damage.
   c. Fish passage. Passage in Mill Creek will be provided for any adult or juvenile salmon or steelhead present in the project area during construction, and after construction for the life of the project at these key points:
      i. The screen face
      ii. The ladder
   d. Fish screens. All water intakes used for a project, including pumps used to isolate an in-water work area, will have a fish screen installed, operated and maintained according to NOAA Fisheries' fish screen criteria.[2]
   e. Pollution and Erosion Control Plan. A pollution and erosion control plan will be prepared and carried out to prevent pollution related to construction operations. The plan must be available for inspection on request by COE or NOAA Fisheries.
      i. Plan Contents. The pollution and erosion control plan must contain the pertinent elements listed below, and meet requirements of all applicable laws and regulations.
         (1) Practices to prevent erosion and sedimentation associated with access roads, stream crossings, construction sites, borrow pit operations, haul roads, equipment and material storage sites, fueling operations and staging areas.
         (2) Practices to confine, remove and dispose of excess concrete, cement and other mortars or bonding agents, including measures for washout facilities.
         (3) A description of any hazardous products or materials that will be used for the project, including procedures for inventory, storage, handling, and monitoring.
         (4) A spill containment and control plan with notification procedures, specific clean up and disposal instructions for different products, quick response containment and clean up measures that will be

[2] National Marine Fisheries Service, *Juvenile Fish Screen Criteria* (revised February 16, 1995) and *Addendum: Juvenile Fish Screen Criteria for Pump Intakes* (May 9, 1996) (guidelines and criteria for migrant fish passage facilities, and new pump intakes and existing inadequate pump intake screens) (http://www.nwr.noaa.gov/1hydrop/hydroweb/ferc.htm).

available on the site, proposed methods for disposal of spilled materials, and employee training for spill containment.

(5) Practices to prevent construction debris from dropping into any stream or water body, and to remove any material that does drop with a minimum disturbance to the streambed and water quality.

ii. Inspection of erosion controls. During construction, all erosion controls must be inspected daily during the rainy season and weekly during the dry season to ensure they are working adequately.[3]

(1) If inspection shows that the erosion controls are ineffective, work crews must be mobilized immediately to make repairs, install replacements, or install additional controls as necessary.

(2) Sediment must be removed from erosion controls once it has reached 1/3 of the exposed height of the control.

f. Construction discharge water. All discharge water created by construction (*e.g.*, concrete washout, pumping for work area isolation, vehicle wash water) will be treated as follows.

i. Water quality. Facilities must be designed, built and maintained to collect and treat all construction discharge water using the best available technology applicable to site conditions. The treatment must remove debris, nutrients, sediment, petroleum hydrocarbons, metals and other pollutants likely to be present.

ii. Discharge velocity. If construction discharge water is released using an outfall or diffuser port, velocities must not exceed 4 fps.

iii. Spawning areas. No construction discharge water may be released within 300 feet upstream of active spawning areas.

iv. Temporary stream crossings.

(1) The number of temporary stream crossings must be minimized.

(2) Temporary road crossings must be designed as follows:

(a) A survey must identify and map any potential spawning habitat within 300 feet downstream of a proposed crossing.

(b) No stream crossing may occur at known or suspected spawning areas, or within 300 feet upstream of such areas if spawning areas may be affected.

(c) The crossing design must provide for foreseeable risks (*e.g.*, flooding and associated bedload and debris) to prevent the diversion of streamflow out of the channel and down the road if the crossing fails.

(d) Vehicles and machinery must cross riparian areas and streams at right angles to the main channel wherever possible.

[3] "Working adequately" means no turbidity plumes are evident during any part of the year.

v. Obliteration. When the project is completed, all temporary access roads must be obliterated, the soil must be stabilized, and the site must be revegetated. Temporary roads in wet or flooded areas must be abandoned and restored as necessary by the end of the in-water work period.

g. Heavy Equipment. Use of heavy equipment will be restricted as follows:

i. Choice of equipment. When heavy equipment must be used, the equipment selected must have the least adverse effects on the environment (*e.g.*, minimally-sized, rubber-tired).

ii. Vehicle staging. Vehicles must be fueled, operated, maintained and stored as follows:

(1) Vehicle staging, cleaning, maintenance, refueling, and fuel storage must take place in a vehicle staging area placed 150 feet or more from any stream, water body or wetland.

(2) All vehicles operated within 150 feet of any stream, water body or wetland must be inspected daily for fluid leaks before leaving the vehicle staging area. Any leaks detected must be repaired in the vehicle staging area before the vehicle resumes operation. Inspections must be documented in a record that is available for review on request by COE or NOAA Fisheries.

(3) All equipment operated instream must be cleaned before beginning operations below the bankfull elevation to remove all external oil, grease, dirt, and mud.

(4) Stationary power equipment. Stationary power equipment (*e.g.*, generators, cranes) operated within 150 feet of any stream, water body or wetland must be diapered to prevent leaks, unless otherwise approved in writing by NOAA Fisheries.

h. Site preparation. Native materials will be conserved for site restoration.

i. If possible, native materials must be left where they are found.

ii. Materials that are moved, damaged or destroyed must be replaced with a functional equivalent during site restoration.

iii. Any large wood[4], native vegetation, weed-free topsoil, and native channel material displaced by construction must be stockpiled for use during site restoration.

i. Isolation of in-water work area. If adult or juvenile fish are reasonably certain to be present, the work area will be well isolated from the active flowing stream using inflatable bags, sandbags, sheet pilings, or similar materials. The work area will also be isolated if in-water work may occur within 300 feet upstream of spawning habitats.

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[4] For purposes of this Opinion only, "large wood" means a tree, log, or rootwad big enough to dissipate stream energy associated with high flows, capture bedload, stabilize streambanks, influence channel characteristics, and otherwise support aquatic habitat function, given the slope and bankfull width of the stream in which the wood occurs. See, Oregon Department of Forestry and Oregon Department of Fish and Wildlife, *A Guide to Placing Large Wood in Streams*, May 1995 (www.odf.state.or.us/FP/RefLibrary/LargeWoodPlacemntGuide5-95.doc).

j. Capture and release. Before and intermittently during pumping to isolate an in-water work area, an attempt must be made to capture and release fish from the isolated area using trapping, seining, electrofishing, or other methods as are prudent to minimize risk of injury.

i. A fishery biologist experienced with work area isolation and competent to ensure the safe handling of all ESA-listed fish must conduct or supervise the entire capture and release operation.

ii. If electrofishing equipment is used to capture fish, the capture team must comply with NOAA Fisheries' electrofishing guidelines.[5]

iii. The capture team must handle ESA-listed fish with extreme care, keeping fish in water to the maximum extent possible during seining and transfer procedures to prevent the added stress of out-of-water handling.

iv. Captured fish must be released as near as possible to capture sites.

v. ESA-listed fish may not be transferred to anyone except NOAA Fisheries personnel, unless otherwise approved in writing by NOAA Fisheries.

vi. Other Federal, state, and local permits necessary to conduct the capture and release activity must be obtained.

vii. NOAA Fisheries or its designated representative must be allowed to accompany the capture team during the capture and release activity, and must be allowed to inspect the team's capture and release records and facilities.

k. Earthwork. Earthwork (including drilling, excavation, dredging, filling and compacting) will be completed as quickly as possible.

i. Site stabilization. All disturbed areas must be stabilized, including obliteration of temporary roads, within 12 hours of any break in work unless construction will resume work within 7 days between June 1 and September 30, or within 2 days between October 1 and May 31.

ii. Source of materials. Boulders, rock, woody materials and other natural construction materials used for the project must be obtained outside the riparian area.

(1) Any erodible elements of this system must be adequately stabilized to prevent erosion.

(2) Surface water from the area must not be diverted from or increased to an existing wetland, stream or near-shore habitat sufficient to cause a significant adverse effect to wetland hydrology, soils or vegetation.

l. Site restoration. All streambanks, soils and vegetation disturbed by the project are cleaned up and restored as follows:

i. Restoration goal. The goal of site restoration is renewal of habitat access, water quality, production of habitat elements (such as large woody debris),

[5] National Marine Fisheries Service, *Backpack Electrofishing Guidelines* (December 1998) (http://www.nwr.noaa.gov/1salmon/salmesa/pubs/electrog.pdf).

channel conditions, flows, watershed conditions and other ecosystem processes that form and maintain productive fish habitats.

ii. Streambank shaping. Damaged streambanks must be restored to a natural slope, pattern and profile suitable for establishment of permanent woody vegetation.

iii. Revegetation. Areas requiring revegetation must be replanted before the first April 15 following construction with a diverse assemblage of species that are native to the project area or region, including grasses, forbs, shrubs and trees.

iv. Pesticides. No pesticide application is allowed, although mechanical or other methods may be used to control weeds and unwanted vegetation.

v. Fertilizer. No surface application of fertilizer may occur within 50 feet of any stream channel.

vi. Fencing. Fencing must be installed as necessary to prevent access to revegetated sites by livestock or unauthorized persons.

2. To implement reasonable and prudent measure #2 (fish screen and ladder operations), the COE will ensure that the applicant will design, install and operate the fish screen and ladder, including the following steps.

a. The City shall prepare an Operations and Management Plan for the screens and ladder and submit it to NOAA Fisheries for approval within 90 days after completion of construction. The plan will detail the frequency of inspection and measures to be implemented if the fish ladder collects excessive amounts of debris, such as gravel and woody debris.

b. The City will develop a monitoring strategy in conjunction with NOAA Fisheries that will incorporate the information compiled for the Hydraulic Monitoring task discussed above.

c. The City will submit the study plans for both the ladder and screen to NOAA Fisheries for approval before beginning monitoring.

3. To implement reasonable and prudent measure #3 (monitoring and reporting), the COE will ensure that the applicant completes the following tasks.

a. Construction monitoring. Ensure that the applicant submits a monitoring report to the COE and to NOAA Fisheries within 120 days of project completion describing success meeting the construction terms and conditions for the fish screen and tailrace barrier. The construction monitoring report will include the following information:

i. Project identification

(1) Permittee name, consultation number, and project name,

(2) contact person for project construction, and

(3) starting and ending dates for work completed

ii. Narrative assessment. A narrative assessment of the project's effects on natural stream function.

iii. Photo documentation. Photographs of habitat conditions at the project before, during, and after project completion.[6] Include general views and close-ups showing details of the project and project area, including pre and post construction. Label each photo with date, time, project name, photographer's name, and a comment about the subject.

iv. Work cessation. Dates work cessation was required due to high flows.

v. Fish screen. Compliance with NOAA Fisheries' fish screen criteria.

vi. Pollution and erosion control. A summary of pollution and erosion control inspections, including any erosion control failure, hazardous material spill, and correction effort.

vii. Site preparation. Total cleared area – riparian and upland.

viii. Isolation of in-water work area, capture and release.

(1) Supervisory fish biologist – name and address.

(2) Methods of work area isolation and take minimization.

(3) Stream conditions before, during and within one week after completion of work area isolation.

(4) Means of fish capture.

(5) Number of fish captured by species.

(6) Location and condition of all fish released.

(7) Any incidence of observed injury or mortality.

ix. Site restoration.

(1) Finished grade slopes and elevations.

(2) Log and rock structure elevations, orientation, and anchoring (if any).

(3) Planting composition and density.

(4) A five-year plan to:

(5) Inspect and, if necessary, replace failed plantings to achieve 100% survival at the end of the first year, and 80% survival or 80% coverage after five years (including both plantings and natural recruitment).

(a) Control invasive non-native vegetation.

(b) Protect plantings from wildlife damage and other harm.

b. Hydraulic evaluation report. Prepare a plan for approval by NOAA Fisheries before completion of construction that will provide the following information.

i. Fish ladder. Hydraulic conditions in the fish ladder by measuring velocity and depth of flows that pass through the fish ladder under various flow scenarios (low flow to high flows).

ii. Fish screen. Test the screen performance for approach and sweeping velocities, as specified in the Hydraulic Monitoring section above.

[6] Relevant habitat conditions may include characteristics of channels, eroding and stable streambanks in the project area, riparian vegetation, water quality, flows at base, bankfull and over-bankfull stages, and other visually discernable environmental conditions at the project area, and upstream and downstream of the project.

c. Annual operations monitoring report. Ensure that the applicant submits an annual operations monitoring report to the COE and to NOAA Fisheries by January 31 of each year until 2008, describing its success meeting the operations terms and conditions for the fish screen and ladder. The operations monitoring report will include the following information:

i. Hydraulic conditions in the fish ladder.

ii. Site and channel restoration.

(1) A summary of site restoration plant inspections, and replantings and non-native vegetation control efforts (if any).

(2) Photographic documentation of environmental conditions at the channel restoration sites.

iii. Reporting address. Submit a copy of the construction and annual operating reports to the following address:

Oregon State Director- Portland
NOAA Fisheries
Attn: 2003/00132
525 NE Oregon Street
Portland, OR 97232

iv. Reinitiation. The COE shall reinitiate formal consultation on this Opinion if the City of Salem increases diversions to the Mill Race beyond those for which the screen is designed.

v. Salvage notice. If a dead, injured, or sick endangered or threatened species specimen is found, initial notification must be made to the NOAA Fisheries Law Enforcement Office, Vancouver Field Office, 600 Maritime, Suite 130, Vancouver, Washington 98661; phone: 360.418.4246. Care will be taken in handling sick or injured specimens to ensure effective treatment and care or the handling of dead specimens to preserve biological material in the best possible state for later analysis of cause of death. In conjunction with the care of sick or injured endangered and threatened species or preservation of biological materials from a dead animal, the finder has the responsibility to carry out instructions provided by Law Enforcement to ensure that evidence intrinsic to the specimen is not unnecessarily disturbed.

3. MAGNUSON-STEVENS ACT

3.1 Background

The objective of the essential fish habitat (EFH) consultation is to determine whether the proposed actions may adversely affect designated EFH for relevant species, and to recommend conservation measures to avoid, minimize, or otherwise offset potential adverse effects to EFH resulting from the proposed action.

3.2 Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (MSA), as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), requires the inclusion of EFH descriptions in Federal fishery management plans. In addition, the MSA requires Federal agencies to consult with NOAA Fisheries on activities that may adversely affect EFH.

EFH means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (MSA §3). For the purpose of interpreting the definition of essential fish habitat: "Waters" include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; "substrate" includes sediment, hard bottom, structures underlying the waters, and associated biological communities; "necessary" means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle (50 CFR 600.110).

Section 305(b) of the MSA (16 U.S.C. 1855(b)) requires that:

- Federal agencies must consult with NOAA Fisheries on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH;

- NOAA Fisheries shall provide conservation recommendations for any Federal or state activity that may adversely affect EFH;

- Federal agencies shall within 30 days after receiving conservation recommendations from NOAA Fisheries provide a detailed response in writing to NOAA Fisheries regarding the conservation recommendations. The response shall include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with the conservation recommendations of NOAA Fisheries, the Federal agency shall explain its reasons for not following the recommendations.

The MSA requires consultation for all actions that may adversely affect EFH, and does not distinguish between actions within EFH and actions outside EFH. Any reasonable attempt to encourage the conservation of EFH must take into account actions that occur outside EFH, such as upstream and upslope activities, that may have an adverse effect on EFH. Therefore, EFH consultation with NOAA Fisheries is required by Federal agencies undertaking, permitting or funding activities that may adversely affect EFH, regardless of its location.

3.3 Identification of EFH

The Pacific Fisheries Management Council (PFMC) has designated EFH for Federally-managed fisheries within the waters of Washington, Oregon, and California. Freshwater EFH for Pacific

salmon includes all those streams, lakes, ponds, wetlands, and other water bodies currently, or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable man-made barriers (as identified by the PFMC), and longstanding, naturally-impassable barriers (*i.e.*, natural waterfalls in existence for several hundred years) (PFMC 1999).

Detailed descriptions and identifications of EFH for salmon are found in Appendix A to Amendment 14 to the *Pacific Coast Salmon Plan* (PFMC 1999). Assessment of the potential adverse effects to these species' EFH from the proposed action is based on this information.

The Pacific Fisheries Management Council (PFMC) has designated EFH for three species of Pacific salmon: Chinook (*Oncorhynchus tshawytscha*), coho (*O. kisutch*), and Puget Sound pink salmon (*O. gorbuscha*) (PFMC 1999). Freshwater EFH for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other water bodies currently, or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable man-made barriers (as identified by the PFMC), and longstanding, naturally-impassable barriers (*i.e.*, natural waterfalls in existence for several hundred years). Detailed descriptions and identifications of EFH for salmon are found in Appendix A to Amendment 14 to the *Pacific Coast Salmon Plan* (PFMC 1999). Assessment of potential adverse effects to these species' EFH from the proposed action is based on this information.

3.4 Proposed Action

The proposed action is detailed above in section 1.2. The action area for this consultation begins upstream above Waller Dam and the intake for the Mill Race where log booms alter flows over the dam, and extends downstream into the Willamette River to the extent sediment or other materials from the construction site might reach. This area has been designated as EFH for chinook and coho salmon.

3.5 Effects of Proposed Action

This project will improve passage past the Mill Race and over Waller Dam. As described in detail in section 2.1.3 of this Opinion, the proposed action may result in adverse effects to water quality (sediment). NOAA Fisheries believes the implementation of the fish screen and ladder improvement project is likely to adversely affect EFH for chinook and coho salmon. NOAA Fisheries also believes that providing fish passage and the conservation measures proposed as an integral part of the action would avoid, minimize, or otherwise offset potential adverse impacts to designated EFH.

3.6 Conclusion

NOAA Fisheries believes that implementation of the fish screen and ladder improvement project in Mill Creek will adversely affect designated EFH for chinook and coho salmon in the short term, but will improve passage in the long term.

3.7 EFH Conservation Recommendations

Pursuant to section 305(b)(4)(A) of the MSA, NOAA Fisheries is required to provide EFH conservation recommendations for any Federal or state agency action that would adversely affect EFH. The conservation measures proposed for the project by the applicant and by NOAA Fisheries, all of the reasonable and prudent measures and the terms and conditions contained in section 2.2.3 are applicable to chinook and coho salmon EFH. Therefore, NOAA Fisheries incorporates each of those measures here as EFH recommendations.

3.8 Statutory Response Requirement

Please note that the MSA (section 305(b)) and 50 CFR 600.920(j) requires the Federal agency to provide a written response to NOAA Fisheries after receiving EFH conservation recommendations within 30 days of its receipt of this letter. This response must include a description of measures proposed by the agency to avoid, minimize, mitigate or offset the adverse impacts of the activity on EFH. If the response is inconsistent with a conservation recommendation from NOAA Fisheries, the agency must explain its reasons for not following the recommendation.

3.9 Supplemental Consultation

The COE must reinitiate EFH consultation with NOAA Fisheries if either the action is substantially revised or new information becomes available that affects the basis for NOAA Fisheries' EFH conservation recommendations (50 CFR 600.920).

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